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"TRADER" SERVICE SHEET

1765

BAIRD 101 "Varsity"

Three-Speed Four-Track Tape Recorder

USING a hybrid circuit of one transistor and three valves, Baird 101 "Varsity" is a three-speed four-track tape recorder which features a separate bias oscillator stage. Independent treble and bass tone controls are provided on play; the treble tone control becomes the monitor volume control on record.

The tape deck incorporated is the B.S.R. type TD10 and super imposition is available by recording on adjacent tracks and playing both tracks together.

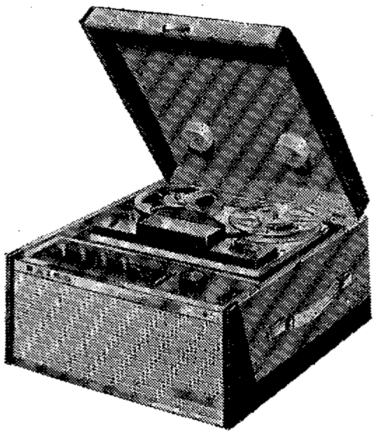
Two inputs are available, one for microphone and one for radio or gram signals, which can be mixed as required, and two output sockets permit recorded signals to be fed to an external amplifier (high impedance) or external loudspeaker (low impedance). Track selection is achieved by means of press-button switches, the track not in use being short-circuited to prevent cross-talk. An electron beam record level indicator is combined with a triode record amplifier and frequency correction stage.

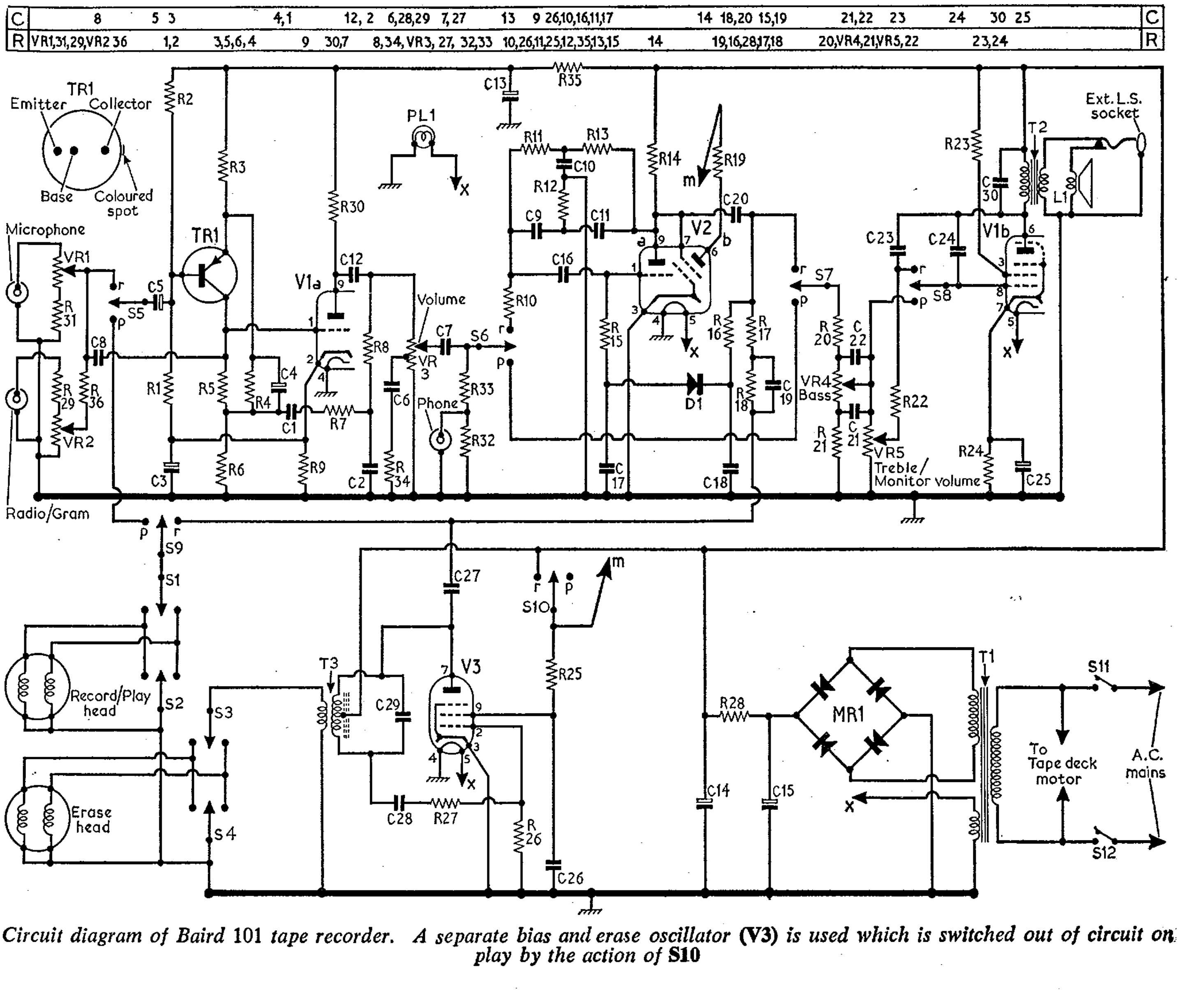
H.t. current is supplied via a bridge metal rectifier from the secondary of a mains isolating transformer which also supplies the valve heater current. Consumption is approximately 80W.

CIRCUIT VOLTAGES

Transistor and valve voltages given in the table overleaf were taken from information supplied by the manufacturer. They were measured on a 20,000Ω/V meter with the recorder connected to a mains input voltage of 240V, and are positive with respect to chassis. The voltage measured at the grid of V3 should read—45V negative on record.

(*Continued overleaf col.* 1)





Circuit diagram of Baird 101 *tape recorder. A separate bias and erase oscillator* **(V3)** *is used which is switched out of circuit on play by the action of* **S10**

Continued from overleaf

DISMANTLING

Servicing Access.—A removable inspection panel is provided in the bottom of the case. When removed, access is obtained to chassis, valves, printed panel and controls.

Chassis Removal.—To remove the chassis from the case, first pull off the five round control knobs.

Invert the recorder and remove four wood screws to release the inspection panel.

Unplug the octal plug which carries leads to the tape heads.

Disconnect the earth lead which bonds the chassis and tape deck.

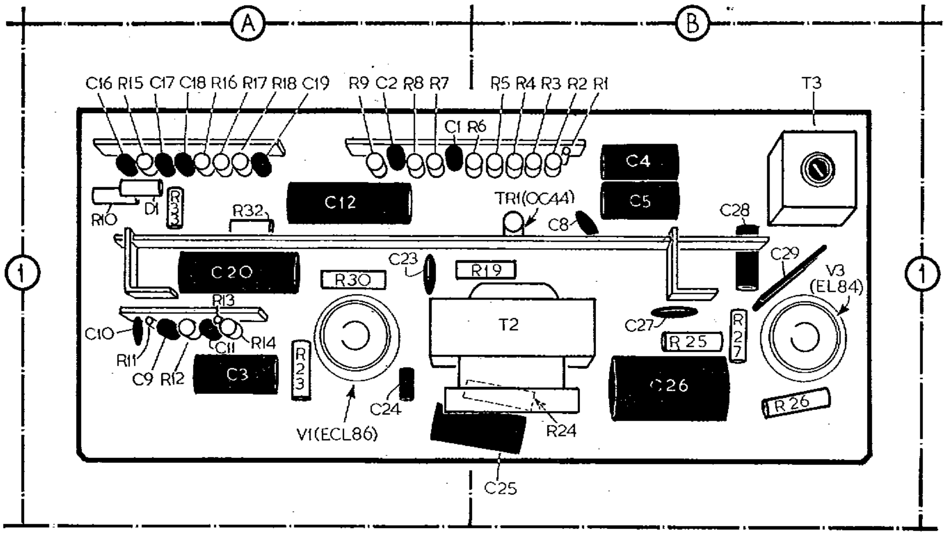
Remove four 4BA nuts securing each corner of the chassis control panel to the cabinet top.

Disconnect the small coil spring from the lever arm which moves the long slide switch, and move the lever towards the side of the case. (This is to prevent the oscillator coil (**T3**) from fouling the lever when the chassis is lifted.)

Lift the chassis from the case.

Tape Deck Removal.—To remove the tape deck first release the inspection panel, unplug the octal plug carrying the tape head leads, disconnect the earth lead and release the switch lever arm as required for chassis removal described above.

Return the case to its right side, ensuring that the switch lever arm will remain clear of the oscillator coil when the tape deck is lifted upwards.



The printed circuit amplifier panel showing the location of components. Most components are accessible merely by removing an inspection panel from the underside of the case

Unscrew two long P.K. screws by passing the screwdriver through the ⅜in holes in the top deck plate. Unscrew these until they can be felt to be loose from their Spire clips.

Withdraw the tape deck upwards. For complete removal it is necessary to disconnect the mains lead to the motor at the control panel end.

SWITCHES

S1-S4 are track selection switches which are operated by press-button control. **S1** connects the appropriate record/play head winding and **S3** connects the corresponding erase head winding to the oscillator output. **S2** and **S4** short-circuit the unselected windings.

S5-S10 comprise the record/play switch assembly and, on the circuit diagram, these are coded with a key letter *r* or *p* to indicate their closed position in either mode of operation.

On/off switches **S11** and **S12** are ganged with the volume control.

COMPONENT VALUES & LOCATIONS

Resistors

R1	18kΩ	B1
R2	1·5MΩ	B1
R3	120kΩ	B1
R4	10kΩ	B1
R5	56kΩ	B1
R6	150Ω	B1
R7	390kΩ	A1
R8	220kΩ	A1
R9	27kΩ	A1
R10	100kΩ	A1
R11	150kΩ	A1
R12	68kΩ	A1
R13	150kΩ	A1
R14	120kΩ	A1
R15	1MΩ	A1
R16	27kΩ	A1
R17	56kΩ	A1
R18	56kΩ	A1
R19	18kΩ	B1
R20	100kΩ	—
R21	120kΩ	—
R22	220kΩ	—
R23	100kΩ	A1
R24	200kΩ	B1
R25	10kΩ	B1
R26	10kΩ	B1
R27	47kΩ	B1
R28	330Ω	—
R29	220kΩ	—
R30	220kΩ	A1
R31	10kΩ	—
R32	100kΩ	A1
R33	1MΩ	A1
R34	68kΩ	—
R35	22kΩ	—
R36	20kΩ	—
VR1	20kΩ	—
VR2	20kΩ	—
VR3	2MΩ	—
VR4	2MΩ	—
VR5	500kΩ	—

Capacitors

C1	300pF	A1
C2	300pF	A1
C3	50μF	A1
C4	50μF	B1
C5	50μF	B1
C6	2,000pF	—
C7	2,000pF	—
C8	68pF	B1
C9	210pF	A1
C10	470pF	A1
C11	120pF	A1
C12	0·1μF	A1
C13	8μF	—
C14	40μF	—
C15	40μF	—
C16	0·01μF	A1
C17	0·01μF	A1
C18	220pF	A1
C19	1,000pF	A1
C20	0·1μF	A1
C21	4,700pF	—
C22	1,500pF	—
C23	56pF	A1
C24	10pF	A1
C25	50μF	B1
C26	0·47μF	B1
C27	25pF	B1
C28	0·01μF	B1
C29	2,700pF	B1
C30	3,000pF	—

Miscellaneous

D1	OA81	A1
L1	—	—
PL1	6V60mA	—
MR1	C38	—
S1-S4	—	—
S5-10	—	—
S11, S12	—	—
T1	—	—
T2	—	—
T3	—	B1

Voltage Table

Transistor	Record			Play		
	Emitter (V)	Base (V)	Collector (V)	Emitter (V)	Base (V)	Collector (V)
TR1 OC44	16	—	13	16·5	—	15·5
Valve	Anode (V)	Screen (V)	Cathode (V)	Anode (V)	Screen (V)	Cathode (V)
V1 ECL86 .. .. a	105	—	14·0	115	—	16·5
V1 ECL86 .. .. b	215	—	5·8	250	—	7·0
V2 EM87 .. .. a	58	—	—	65	—	—
V2 EM87 .. .. b	215	—	—	—	—	—
V3 EL84	—	115	—	—	—	—

SPECIFICATION

(As supplied by the manufacturer)

Mains Supply:	210-250V 50c/s a.c.
Consumption:	80 Watts approximately.
Tape Deck:	B.S.R. type TD10.
Tape Speeds:	1⅞in/sec, 3¾in/sec and 7½in/sec.
Tracks:	Four on ¼in tape.
Reel Diameter:	7in maximum.
Fast Wind/ Rewind Time:	2½ mins approximately for 850 feet of tape.
Record Level Indicator:	Fluorescent indicator with linear display.
Inputs:	Microphone, sensitivity 1mV into 20kΩ impedance. Radio/gram, sensitivity 200mV into 250kΩ impedance.
Outputs:	High impedance for external amplifier and low impedance for external speaker with automatic muting of internal speakers.
Tone Controls:	Independent bass and treble.
Loudspeaker:	8in by 5in elliptical.
Microphone:	Magnetic, stick type with stand.
Frequency Response:	70c/s—4·5kc/s at 1⅞in/sec, 70c/s—8kc/s at 3¾in/sec, 70c/s—11kc/s at 7½in/sec, ± 3dB.
Signal/Noise Ratio:	30dB at 1⅞in/sec, 36dB at 3¾in/sec, 42dB at 7½in/sec.
Distortion:	4 per cent at 250mV (high impedance output), 5 per cent at 1W (low impedance output).
Dimensions:	16in by 16½in by 8in.
Weight:	24 pounds.

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